RESPONSIVENESS SUMMARY FOR THE
LINCOLN PARK STUDY AREA
PROPOSED PLAN
LINCOLN PARK SUPERFUND SITE

This Responsiveness Summary provides responses to comments received by the United States Environmental Protection Agency ("EPA") and the Colorado Department of Public Health and Environment ("CDPHE") regarding the Proposed Plan for the Lincoln Park Study Area. This Proposed Plan was issued June 20, 2000. Individual comment letters, e-mail messages, and a transcript of the July 17th public meeting are included in the administrative record for this decision, and are available for review at the Cañon City Public Library, 516 Macon Avenue, Cañon City, Colorado 81212, at the offices of CDPHE, Laboratory Building, Laboratory and Radiation Services Division, 8100 Lowry Boulevard, Denver, Colorado 80230-6928 (attn: Michelle Lavigne), and at the EPA Superfund Records Center, 999 18th Street, 5th floor North Terrace, Denver, Colorado 80202. EPA and CDPHE have given full consideration to these comments.

Although the Proposed Plan relates only to soil and ground-water cleanup actions in the Lincoln Park Study Area, comments were received on two additional issues. The first issue was whether or not EPA should remove the Lincoln Park Study Area from the National Priorities List (delisting/deletion). The second issue related to operations under Cotter Corporation's Radioactive Materials License for the Cañon City mill. EPA and CDPHE want to respond to all concerns raised during the comment period for the Proposed Plan. However, since some of these issues do not relate directly to the Proposed Plan, EPA and CDPHE have separated those comments relating to delisting/ deletion and radioactive materials licensing from the comments relating to the Proposed Plan.

Finally, in situations where written comments or oral comments expressed similar ideas or concerns, these ideas or concerns were combined into a single comment. Each individual piece of written correspondence received regarding the Proposed Plan for the Lincoln Park Study Area, and the official verbatim transcript of the July 17, 2000 public meeting, are a permanent part of the Administrative Record for the Lincoln Park Superfund Site.

PROPOSED PLAN ISSUES

Comment No. 1

One commenter encouraged EPA to implement the Proposed Plan. The commenter indicated that by implementing the No Further Action proposal, the Lincoln Park Study Area could then be removed from the National Priorities List. The commenter also stated comfort with the planned monitoring, and continued involvement of, EPA and CDPHE.

Response to Comment No. 1

The No Further Action proposal is consistent with this individual's comments. EPA and CDPHE believe that all necessary actions regarding the Lincoln Park Study Area have been taken, and that the data showing decreasing ground-water contamination are evidence that these measures have been effective. However, EPA has decided to only issue a Record of Decision ("ROD") for surface soils within the Lincoln Park Study Area. This decision is based on the following factors:

- public comments received during the comment period for the Proposed Plan;
- recent publication of the new EPA drinking water standard for uranium in ground water; and
- additional evaluation of the appropriateness of issuing a "No Further Action" decision under existing circumstances at the Lincoln Park Superfund Site.

EPA continues to believe that past and ongoing cleanup actions have substantially reduced or eliminated the risks to human health and the environment. Implementation of the conditions and terms of Cotter's Cañon City mill Radioactive Materials License and Remedial Action Plan ("RAP") will continue to ensure the protection of human health and the environment. To verify that no unacceptable exposures to risks posed by the site occur in the future, the existing ground-water monitoring program will be expanded. EPA's and CDPHE's decision to expand the ground-water monitoring program is in direct response to public comments received. Results of the monitoring program will be reviewed by EPA and CDPHE to ensure continued compliance with applicable cleanup objectives.

Comment No. 2

One commenter questioned whether it was safe to drink well water in Lincoln Park.

Response to Comment No. 2

Lincoln Park residents should not use their ground-water wells for drinking purposes, unless their wells have been tested and shown to be below cleanup objectives. Lincoln Park residents who have been affected by the presence of contaminated ground water have all been offered city water, and it is our understanding that all of these residents have been hooked-up to the city water system. Additional hookups are available if anyone is found to be drinking well water within the designated impacted area.

Although there is currently a portion of Lincoln Park with ground water in exceedance of cleanup objectives, ground-water monitoring results indicate that elevated levels of uranium and molybdenum in the aquifer are decreasing with time.

Comment No. 3

One commenter suggested that since there has been contamination of vegetables irrigated with ground water, additional cleanup is required to make the area safe. Another commenter asked about the risks associated with eating vegetables.

Response to Comment No. 3

In 1998, a risk assessment was performed to evaluate potential risks from eating garden vegetables that were primarily irrigated with contaminated ground water. In order to perform the assessment, samples of vegetables were collected from gardens within the Lincoln Park Study Area. It should be noted that the risk assessment did not collect samples of produce irrigated with water from wells with the highest concentration levels of molybdenum or uranium because residents in these areas were either not using the ground water or did not provide samples of their garden produce. It was subsequently confirmed that no one was irrigating fruits and vegetables with the contaminated ground water found upgradient of the DeWeese Dye Ditch, which is where the highest concentrations of contaminants are found.

Analyses of the samples that were collected showed that there was no evidence of mill-related contamination, except in the case of turnips. It was observed that molybdenum may have a tendency to accumulate in the outer skins of turnips. The molybdenum accumulation in turnips did not appear to extend to the inner portion of the vegetable. It was therefore concluded that vegetable uptake of contamination may be possible, but was not widespread. Consequently, the risk assessment concluded that there were no health risks from mill-related contaminants to Lincoln Park residents from the soil in their yards or gardens or from eating home-grown fruits or vegetables.

Comment No. 4

What about the risks posed to wildlife and domestic animals from eating the grass and vegetables?

Response to Comment No. 4

This issue was studied in the ecological risk assessment performed for the Lincoln Park Study Area. The ecological risk assessment determined that, overall, potential risks at the site are negligible and any areas of concern are from non-radioactive metals. For the Lincoln Park Study Area, the ecological risk assessment drew the following conclusions:

- Risks to small mammals (i.e., deer mouse), from exposure to arsenic, radium-226, and selenium, were found to be minimal for individuals and negligible for small mammal populations. This means that there may be a potential risk to certain more sensitive individuals, but that overall, the risk is below established action levels for the small mammal populations.

- Selenium concentrations in the vegetation and soil in Lincoln Park were found to pose no risk to mule deer, elk, or other wild ungulates. Risks to mule deer from arsenic, cadmium, and zinc were found to be minimal, and negligible for molybdenum. This means that there may be a small potential risk, for certain more sensitive deer, posed by arsenic, cadmium, and zinc; while the risk from molybdenum is below the action level. In addition, it was determined that the levels of selenium did not pose a risk to cattle or horses that might be grazed in pastures.

- Overall risks to predators such as fox, coyote, and cougar are negligible.

- Risks from toxic exposure to copper, radium-226 and selenium were found to be negligible for the American Kestrel and Great Horned Owl.

Comment No. 5

Are there ecological risks to animals eating the contaminated wind blown dust?

Response to Comment No. 5

If the commenter is concerned about conditions within the Lincoln Park Study Area, please see the previous response.

If the commenter is referring to risks associated with the areas adjacent to Cotter's Cañon City mill property, the potential ecological risks associated with contaminated soil and wind blown dust were determined to be minimal, based on the results of the ecological risk assessment.

Comment No. 6

Several commenters indicated that it was their understanding that the cleanup of Sand Creek stopped at a point in the 1700 block of Elm Avenue and wondered why the cleanup had not been extended to the east. The commenters also expressed their belief that none of the cleanup actions to date had stopped contaminants from contaminating Sand Creek and certain wells in Lincoln Park.

Response to Comment No. 6

Sediment removal from Sand Creek began on Cotter property and proceeded downstream until the point where Sand Creek becomes a perennial stream, west of Ash Street. Sediments within that portion of Sand Creek that is perennial were sampled as part of the Ecological Risk Assessment. Results from the sampling indicated no elevated levels of contaminants in Sand Creek sediments, nor where Sand Creek enters the Arkansas River.

In addition, water samples are regularly taken from Sand Creek near Ash Avenue. In 2000, the highest concentration of molybdenum was 0.011 milligrams per liter ("mg/L") and the highest concentration of uranium was 0.0134 mg/L (*Calendar Year 2000 Environmental and Occupational Performance Report and ALARA Review* ["2000 Annual Report"], Cotter Corporation, June 30, 2001). These values are well below the ground-water cleanup objectives of 0.1 mg/L for molybdenum and 0.035 mg/L for uranium. Furthermore, the concentration for uranium is also well below EPA's drinking water standard, or maximum contaminant level ("MCL") of 0.030 mg/L, which was promulgated on December 7, 2000.

EPA's and CDPHE's proposal of no further action was based on information obtained from reports that have been produced over the past several years. EPA's and CDPHE's proposal was also based on the results of cleanup actions that have taken place in Lincoln Park and at Cotter's Cañon City mill. The above mentioned reports are available for review in the Cañon City Public Library.

EPA and CDPHE will continue to be involved with monitoring activities at Cotter's Cañon City mill and will continue to review data obtained from monitoring wells in Lincoln Park.

Comment No. 7

Which wells are being used in the monitoring network? Are there enough? How long will these wells be monitored?

Response to Comment No. 7

Initially, over 200 wells were sampled to delineate the nature and extent of contamination in the vicinity of Cotter's Cañon City mill. Currently, there are over 50 locations that are monitored for water levels and/or water quality. These sampling locations include ground-water wells and surface-water sites. All monitoring results are reported in annual reports, which are issued by Cotter and reviewed by CDPHE and EPA. Ground-water monitoring in Lincoln Park will continue until the Radioactive Materials License is terminated.

There are an adequate number of wells to evaluate Cotter's compliance with pertinent license requirements and to monitor the ground-water quality under Lincoln Park. However, in response to public concerns, EPA and CDPHE have determined that additional ground-water sampling locations are needed to adequately define the extent of the uranium and molybdenum plumes. Therefore, EPA and CDPHE have developed an expanded ground-water monitoring program to accomplish this goal. Approximately twelve additional ground-water monitoring wells will be added to the existing monitoring program. Expansion of the existing program was initiated in the spring of 2001.

Comment No. 8

The government should do surprise inspections and collect independent data. The government should not just rely on Cotter to report monitoring results.

Response to Comment No. 8

CDPHE has a policy of conducting both announced and unannounced inspections. Announced inspections are sometimes necessary to ensure that personnel, such as the laboratory supervisor, the radiation safety officer, or the Quality Assurance/Quality Control ("QA/QC") representative are available to meet with the CDPHE inspector.

CDPHE collects split samples when Cotter personnel perform certain sample collections. The term "split" means that a sample is divided into two separate samples. One sample is then analyzed by the Cotter lab and the other is analyzed by CDPHE to verify laboratory analytical results. CDPHE collects both ground water and soil split samples. To date, analytical results for samples collected by Cotter personnel have been comparable to the analytical results for split samples collected by CDPHE.

With regard to the monitoring of soil cleanup activities, both CDPHE and EPA have independently conducted gamma surveys to verify that cleanup actions have been properly implemented. In a few cases, these independent surveys resulted in Cotter personnel performing additional soil removal.

Comment No. 9

How does the permeable reactive treatment wall work?

Response to Comment No. 9

The permeable reactive treatment wall ("PRTW") was installed to treat the 1 to 3 gallons per minute ("gpm") of ground water that continues to flow under the Soil Conservation Service ("SCS") Dam. The PRTW contains a layer of zero-valent iron ("ZVI") filings. These iron filings react chemically with the uranium and molybdenum within the ground

water passing through the PRTW. As a result of the chemical reaction, the dissolved uranium and molybdenum attach themselves to the iron filings and are consequently removed from the ground water. It is anticipated that the iron filings (the reactive medium in the wall) will last from 20 to 50 years and the system has been designed such that the iron filings can be replaced if necessary.

Comment No. 10

What are the factors that will impact the life expectancy of the Permeable Reactive Treatment Wall ("PRTW")? What will happen to the spent iron filings and “trapped” contamination?

Response to Comment No. 10

As discussed in the document entitled *Final Design for a Permeable Treatment Wall Down Gradient from the SCS Barrier*, dated April 3, 2000, there is no historical information on life expectancy for permeable reactive barriers that have been constructed to treat uranium and molybdenum contamination in ground water. Factors that may influence removal of the zero-valent iron ("ZVI") from the PRTW include:

- loss of permeability through the reactive gate;
- reaching capacity of the ZVI to reduce the concentration of uranium and molybdenum;
- desorption of either uranium or molybdenum from the ZVI;
- development of the property and institutional controls; and
- when cleanup objectives are met.

The PRTW is designed so that the ZVI can be accessed, removed, and replaced with new material if any of the above factors are determined to exist. Once the iron filings become saturated with uranium and molybdenum, the filings will be removed and placed in the lined impoundments.

Comment No. 11

How do you measure the effectiveness of the Permeable Reactive Treatment Wall?

Response to Comment No. 11

Ground-water samples are collected both upgradient and downgradient, as well as within the reactive medium (iron filings). Monitoring locations within the reactive medium are being sampled monthly during the first year of operation and will be sampled quarterly thereafter. Monitoring wells located in the shallow aquifer are sampled quarterly. Samples are analyzed in the laboratory, evaluated, and then the results are submitted to EPA and CDPHE for review.

Comment No. 12

How can we judge the effectiveness of the Permeable Reactive Treatment Wall ("PRTW"), given that it has been operating for such a short period of time?

Response to Comment No. 12

Although the PRTW has only been in operation since June 2000, initial monitoring results suggest that the PRTW is effectively removing uranium and molybdenum from the ground water. Nevertheless, EPA and CDPHE will continue to evaluate data as it becomes available and will make a determination as to the PRTW's long-term effectiveness only after sufficient data have been collected. It is estimated that a minimum of one year of data may be needed to make such a determination. This is another reason why EPA and CDPHE have decided to temporarily postpone issuing a decision on the ground-water portion of the Lincoln Park Study Area.

Comment No. 13

How will EPA and CDPHE address the uncertainty associated with future catastrophic events that might warrant EPA involvement?

Response to Comment No. 13

Under the authorities granted by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA") and requirements contained in the Radioactive Materials License for Cotter's Cañon City mill, the state and federal governments have the authority to take action in response to any potential adverse impacts to human health or the environment from Cotter's Cañon City mill. In addition, EPA maintains an active emergency response program that can be activated immediately if there is a major threat to public health.

Also, the Radioactive Materials License contains requirements and protocols for reporting accidents and emergency response capability. Under the license, Cotter is required to immediately report any discovery of failure, or imminent threat of failure, to CDPHE. CDPHE, in turn, keeps EPA informed of all significant actions taken in connection with Cotter's operations.

Comment No. 14

One commenter stated it was not clear what effect the Proposed Plan remedy would have on the notations for real estate. The commenter also asked whether reference to potential contamination would be removed from deeds and, if so, how this would happen.

Response to Comment No. 14

Neither EPA nor CDPHE has directed that any reference to contamination be included in any title documents. The remedy, as proposed by EPA and CDPHE, was based on the conclusion that EPA and CDPHE believe that, due to the effectiveness of prior cleanup activities, there is no risk to human health or the environment and that no additional cleanup is necessary within the Lincoln Park Study Area. However, in light of some other issues that were raised during the public comment period [please see Response to Comment No. 1], EPA has decided to postpone issuance of a Record of Decision ("ROD") for the ground-water portion of the Lincoln Park Study Area and instead, issue a ROD for only the surface-soils portion of the site.

In any event, the effect that an EPA or CDPHE decision would have on real estate title documents and deeds would depend upon the guidelines and requirements established by the real estate community.

Comment No. 15

One commenter asked whether the boundary of the Lincoln Park Study Area Operable Unit had changed since the study began.

Response to Comment No. 15

A specific boundary for the Lincoln Park Study Area was not drawn until 1998. Since that time, the boundary has not changed. The boundary was drawn in response to real estate professionals who were allegedly stating that any property in an area as large as Fremont County was potentially within the Superfund site boundary. The boundaries of the Lincoln Park Study Area were established based on the potential extent of ground-water contamination.

Comment No. 16

Can we project when the molybdenum and uranium plumes might disappear completely?

Response to Comment No. 16

No. It is not the goal of the ground-water cleanup effort to completely eliminate concentrations of molybdenum and uranium in the ground water. Rather, EPA's and CDPHE's goal is to ensure that the concentration levels of these contaminants meet objectives that protect human health and the environment. In areas where the goals have not yet been met, restrictions called institutional controls have been put into place.

While it is not possible to predict when the plumes might disappear completely, efforts have been made to predict concentration trends over time. In a document entitled, *Ground-Water Hydrology and Simulation of Five Remediation Alternatives for an Area Affected by Uranium-Mill Effluent Near Cañon City, Colorado*, Water Resources Investigations Report 98-4229, 1999, the United States Geological Survey ("USGS") reported that remedial actions implemented prior to 1996 would likely result in long-term decreases in concentrations of uranium downgradient of the mill site.

Ongoing collection of data from the ground-water monitoring program can be used to observe future ground-water quality trends. In comparing the data, evidence suggests that ground-water quality in Lincoln Park is improving over time. The ground-water monitoring program is a tool that will allow EPA and CDPHE to evaluate these trends.

DELISTING/DELETION ISSUES

Comment No. 17

Several commenters expressed the desire to have the Lincoln Park area removed from the National Priorities List ("NPL" or "Superfund List"). Some of these comments were qualified, stating that the area should be delisted only if it was safe to do so.

Response to Comment No. 17

EPA and CDPHE have reviewed the Lincoln Park Study Area data, and have determined that the removal of contaminated soils, coupled with the current institutional control (providing city drinking water to Lincoln Park residents) removes all exposure pathways to contaminants. Further, data showing the continuous improvement in ground-water quality in the Lincoln Park Study Area indicate that the cleanup actions taken to date at the mill have effectively eliminated the source of ground-water contamination.

However, it is current EPA policy that a site such as the *entire* Lincoln Park Study Area cannot be deleted from the National Priorities List ("NPL") until the ground water under Lincoln Park has reached cleanup objectives throughout the entire aquifer.

Although the current policy toward ground-water cleanup does not allow for deletion of the *entire* Lincoln Park Study Area at this time, the surface soils portion of the site *is* eligible for deletion because the soils cleanup actions have eliminated the risks associated with contaminated sediments within the Sand Creek drainage. A separate public comment period would be held for any delisting proposal prepared by EPA.

Comment No. 18

Several commenters expressed the desire to have EPA and CDPHE continue to monitor, to ensure that the remedy is, and remains, protective of human health and the environment. In a related issue, one commenter stated a concern that removing the Lincoln Park Study Area from the National Priorities List might cause Cotter to become lax in their commitment to human health and environmental protection.

Response to Comment No. 18

Monitoring of Cotter's Cañon City mill and within the Lincoln Park Study Area is required under the Radioactive Materials License. Ground-water monitoring and air-quality monitoring are reported annually. This information is summarized in reports that are available at the Cañon City Public Library.

CDPHE reviews the data from each monitoring event to ensure that air quality remains within state standards, and that water quality is improving. CDPHE can, through the license, require Cotter to correct any problems detected as a result of these monitoring programs. EPA will also review this data to ensure that the cleanup continues to be protective of human health and the environment. The purpose of these reviews is to confirm that human health and the environment are being effectively protected. These reviews are also performed to evaluate whether or not the original cleanup levels have remained protective. If a given review determines that the cleanup actions are no longer protective, appropriate action may be taken to address the problems identified.

CDPHE and EPA meet to discuss Superfund sites regularly, and if necessary, CDPHE will alert EPA of any problems that may arise, regardless of the five-year review time frame. Since both CDPHE and EPA maintain all of their authority to regulate Cotter's Cañon City mill regardless of the Superfund listing status, EPA and CDPHE have no intention of allowing operation of the mill to become lax.

The State and EPA have the authority to take enforcement action even if a site is not on the National Priorities List ("NPL"). If a site is on the NPL, it is eligible for federal funds to be used for cleanup. However, if there is a responsible party that can perform the cleanup work, listing on the NPL is not required. Several sites in the State of Colorado that are not on the NPL are being cleaned up under EPA supervision. Removing a site from the National Priorities List does not take away any of the State's or EPA's authority to deal with either an emergency situation or a non-emergency situation.

Comment No. 19

Several commenters stated that they were opposed to the delisting of the Lincoln Park Study Area as a Superfund site because they believed that there is a need to see more cleanup results before delisting. This includes treatment results from the permeable reactive treatment wall, and additional or complete disappearance of the contaminated ground-water plumes underneath the Lincoln Park Study Area.

The commenters also indicated that they were not convinced that there had been improvements in the quality of the water or soil. In addition, the commenters stated that they did not believe that there was any improvement in public perceptions of the perceived risks to the health and well being of the general public. Also, one commenter stated that they believe that past contamination still exists, has not been cleaned up, and that it is unknown whether current contamination is being stopped.

Response to Comment No. 19

The subject of delisting has been addressed in the Response to Comment No. 17. Regarding the commenters desire to see additional or complete disappearance of the contaminated ground-water plume underneath the Lincoln Park Study Area, EPA and CDPHE have data that confirm improvements in the ground-water quality and improvements in soils where removals were deemed necessary.

EPA and CDPHE consider protection of human health and the environment to be the highest priority. Conclusions from the risk assessment process for the Lincoln Park Superfund Site indicate that risks no longer exist to residents. Delisting of the Lincoln Park Study Area will not be considered until data demonstrate that the PRTW is operating effectively and the ground water under Lincoln Park has reached cleanup objectives throughout the entire aquifer.

Comment No. 20

One commenter was opposed to the delisting of the Lincoln Park Study Area as a Superfund site until there is a more complete understanding of the linkage between contamination and observed illnesses in the community, particularly autoimmune diseases.

Response to Comment No. 20

The linkage between contamination from Cotter's Cañon City mill and the incidence of autoimmune diseases in the community has not been shown. Although EPA and CDPHE know about the effects of certain contaminants, it is difficult to prove a cause and effect relationship between a given person's illness or the statistical prevalence of an illness in a community.

The three cancer studies performed by CDPHE did not show any statistically higher incidences of cancer in the Lincoln Park neighborhood. This is not to say that none of the cancers in the neighborhood were a result of the contamination from Cotter's Cañon City mill; they may have been. It only shows that widespread effects cannot be proven.

Health Sciences in the United States have advanced dramatically in the last 100 years, however there remain areas where unknowns exist. The linkage between contamination from Cotter's Cañon City mill and the incidence of autoimmune diseases in the community is one of these unknowns. If Cotter were still contaminating the Lincoln Park community, this might be a reason to require further action, but this is not the case.

Adverse health effects associated with exposure to radionuclides, such as carcinogenicity and effects on the immune system, are well documented in scientific literature. Those effects, however, are associated with the dose of radiation received. The dose-response relationship applies to radionuclides, just as it does with any other chemical or contaminant. At low doses it is highly unlikely that any adverse effects will occur, and with increasing dose, one will see an increase in the severity of effect. This quantitative relationship between the dose of radionuclides and the effects observed have also been well documented (e.g., *Federal Guidance Report #13, Cancer Risk Coefficients for Environmental Exposure to Radionuclides*).

The risk assessment conducted for the Lincoln Park Study Area looked at the level of radionuclides that were present in the area, and making use of this relationship between dose and effect, looked at the potential for risk to the residents in the area. The risk assessment concluded that there was a potential for unacceptable risks at some of the wells in the Lincoln Park Study Area, if residents were using those wells as their only drinking water source. It also concluded that the levels of radionuclides in soil in the Lincoln Park Study Area were consistent with typical background levels in Colorado.

As far as the Proposed Plan is concerned, it is important to note that any possible illnesses caused by Cotter's Cañon City mill would have been a result of past contamination. EPA and CDPHE are fully aware of the neighborhood's concern and frustration regarding this past contamination. However, the issue at hand is the current status of that contamination, and whether or not people are still being exposed to levels of contaminants that put their health at risk.

Past contamination, which may or may not have resulted in specific illnesses, only contributes to this decision in terms of how much of this contamination may remain. EPA's responsibility under the law is to clean up contaminated sites that may present risks to human health or the environment. Consequently, any decision regarding the delisting of the Lincoln Park Study Area will be based on whether the cleanup actions taken to date will be protective and whether or not these actions will ensure that people will not be drinking water in excess of the cleanup objectives.

Comment No. 21

Several commenters stated that decisions on "No Further Action" and delisting were politically motivated, and that environmental protection should be more important than stigma. One commenter specifically indicated that they believed EPA was considering delisting the Lincoln Park Study Area just to remove the stigma of a "Superfund" label.

Response to Comment No. 21

Although deletion of the Lincoln Park Study Area would in effect remove the Superfund stigma from the Lincoln Park community, this is not the basis for EPA's proposal for deletion. EPA has been considering deletion of the Lincoln Park Study Area from the NPL because we believe that no further remedial actions are required and that current conditions in the Lincoln Park Study Area are protective of human health and the environment. In addition, EPA and CDPHE have heard from some residents that the issue of "Superfund stigma" was important to the community of Lincoln Park.

However, in direct response to other public comments and issues raised during the public comment period, EPA has decided to postpone deletion of the ground-water portion of the Lincoln Park Study Area from the NPL. Deletion/delisting of the ground-water portion of the site will be considered at a later date and not until sufficient data have been collected to demonstrate that the PRTW is operating effectively and ground water under Lincoln Park is in compliance with cleanup objectives throughout the aquifer underlying Lincoln Park.

The decision regarding the Lincoln Park Study Area soils, and the eventual deletion of this portion of the site from the NPL, will at least remove a part of the "Superfund stigma" from the Lincoln Park community.

Comment No. 22

How do you put a site back on the NPL after it's been delisted?

Response to Comment No. 22

Sites may be restored to the NPL when conditions warrant it. If releases or threats of releases of a hazardous substance are detected, EPA can place a site back on the NPL by publishing a notice in the Federal Register. Being on the NPL is not a prerequisite for EPA to take action at a site.

EPA always retains its enforcement authority to require a potentially responsible party to perform actions that would correct any contamination problems that might arise. The only time a listing would be necessary is if funding from the Superfund Trust Fund would be needed to take action, a situation unlikely to occur at the Lincoln Park Superfund Site.

Comment No. 23

One commenter specifically questioned what type of performance would need to be demonstrated by the permeable reactive treatment wall ("PRTW") before the Lincoln Park Study Area could be delisted. The commenter cited a CDPHE Lincoln Park Superfund Site news letter (dated December 1999) that stated "[T]he effectiveness of the PRTW, in cleaning contaminated ground water, will have to be determined before Superfund delisting discussions can begin." The commenter felt that EPA and CDPHE were implying that circumstances had changed, with regard to delisting and the effectiveness of the PRTW, and wondered why circumstances had changed.

The commenter also expressed concern that EPA's proposed decision was being based on politics and not on the needs and desires of the community. The commenter finally stated that EPA should allow for a period of time to assess the effectiveness of the PRTW before proceeding toward the delisting process.

Response to Comment No. 23

The Superfund process identifies certain cleanup technologies that are appropriate for a given site. These technologies are evaluated to ensure that they will work with the contaminants of concern and with other site-specific factors such as geology or weather.

Sometimes, a technology has a proven record and the evaluation is based on the past performance of the technology. At other times, a technology is newer, and specific testing is necessary. In this particular case, the PRTW is a relatively new technology that has had an excellent record of treating ground-water contamination. However, it does not have an extended track record with the contaminants of concern at this particular site. For that reason, bench scale testing (testing performed in the laboratory rather than after installation) was performed in 1999. This testing found that the PRTW technology would do a good job of treating the contaminants found at Cotter's Cañon City mill.

Based on this testing, EPA and CDPHE concluded that the PRTW technology chosen by Cotter was acceptable. This decision is consistent with the Superfund process.

In response to concerns expressed by some members of the community, EPA will postpone the delisting process for the ground-water portion of the Lincoln Park Study Area. It is current EPA policy that a site cannot be completely deleted from the National Priorities List until such time as the ground water under the site has reached cleanup objectives throughout the entire aquifer. EPA will wait until a sufficient amount of ground-water monitoring data from the PRTW has been collected to demonstrate that the system is operating as expected.

Comment No. 24

With regard to performing an assessment of the effectiveness of the PRTW prior to delisting, what changed since the December 1999 fact sheet was issued?

Response to Comment No. 24

Nothing has changed since issuance of the December 1999 fact sheet. EPA will not initiate the delisting process for the ground-water portion of Lincoln Park Study Area until sufficient data have been collected to demonstrate that the PRTW is operating effectively.

COTTER'S CAÑON CITY MILL & RADIOACTIVE MATERIALS LICENSING ISSUES

Comment No. 25

Several commenters expressed concern that continued operation of Cotter's Cañon City mill (particularly additional disposal of material in the tailings ponds) might result in additional contaminated ground water entering the Lincoln Park area. The commenters believe that this might cause the contaminated ground-water plume to remain, rather than shrink, and suggested that further action needs to be taken regarding these ponds.

Response to Comment No. 25

Under its Radioactive Materials License, the Cotter Corporation has removed source material (tailings) from areas where they were contributing to ground-water contamination, and moved these tailings to lined impoundments. These impoundments have been monitored since their construction, and show no evidence of any leakage. In addition, Radioactive Health and Safety Procedure 3-10 of Cotter's Radioactive Materials License requires evaluation of potential impoundment liner breakthrough and specifies the necessary corrective actions that must be taken in the event of a breakthrough. The results of the evaluation are reported in the annual *Environmental and Occupational Performance Report and ALARA Review*, which is prepared by Cotter.

Residual ground-water contamination at Cotter's Cañon City mill flows down the Sand Creek alluvium within the mill property. However, at the Soil Conservation Service ("SCS") dam, this flow is intercepted by a collection system. The water is pumped back to the mill. Any ground water that is not captured by this collection system (approximately 1 to 3 gallons per minute) will flow through the permeable reactive treatment wall ("PRTW") located downgradient of the SCS dam, where dissolved uranium and molybdenum will be removed from the ground water.

Based on the control systems in place, EPA and CDPHE do not believe that continued operation of Cotter's Cañon City mill presents a health or environmental risk to the community. Although additional cleanup actions at the mill will need to be taken under the Radioactive Materials License, this additional cleanup relates only to the mill itself.

Comment No. 26

One commenter expressed the need to clean up contaminated soil adjacent to the mill as an additional action that must be taken. The commenter stated that this cleanup needs to be done now, before the material is blown by the wind towards developed areas.

Response to Comment No. 26

Air monitoring data collected both at Cotter's Cañon City mill and in the Lincoln Park Study Area show no indication that the contaminated soils either become airborne or are transported to developed areas. Furthermore, this localized area of contaminated soil has not contributed to the past contamination of either Sand Creek or the ground water within the Lincoln Park Study Area. Cleanup of this area of contaminated soil will be addressed during final reclamation of Cotter's Cañon City mill property. The no-further action decision for the soils portion of the Lincoln Park Study Area reflects the findings that there are no unacceptable risks posed by the soils.

Comment No. 27

Several commenters expressed a desire to restrict Cotter's Cañon City mill from receiving additional material. These commenters did not want Cañon City to be a dumping ground, and did not want any additional waste to be deposited at Cotter's Cañon City mill.

One commenter pointed out that Cotter was originally issued a permit for solid waste disposal. The commenter further stated that although it was Fremont County's original understanding that Cotter would mill raw uranium ore, Cotter was subsequently granted permission to receive tailings, residues, raffinates, and spent catalysts. The commenter believes that all governing agencies, including the Fremont County commissioners, and an informed community have the responsibility to re-visit the solid waste disposal permit and restrict Cotter to receiving only raw ore.

Response to Comment No. 27

Across the United States and in Colorado, any industry that can show, using the best technology currently available, that they can safely operate and successfully manage the wastes they generate is allowed to do so.

The use of Cotter's Cañon City mill to process and dispose of additional radioactive material is controlled by Cotter's Radioactive Materials License. Section 9.1 of the license allows Cotter's Cañon City mill to receive, store, process, transfer and dispose of uranium-bearing and thorium-bearing solids and liquids. Citizens concerned about this issue should comment to CDPHE during the license renewal process for Cotter's Cañon City mill. The Proposed Plan is not intended to address the issues raised by the commenter.

Comment No. 28

One commenter requested monitored retrievable storage of materials at Cotter's Cañon City mill, rather than permanent disposal.

Response to Comment No. 28

The concept of monitored retrievable storage assumes that there is no current technology sufficient to deal with the waste under consideration. Consequently, the waste would be temporarily stored until such technology is developed. In the United States, waste regulation is not premised on future technology. Instead, industries are required to show that, using the best technology currently available, they can successfully manage the wastes they generate. In this way, there is some assurance that a business can operate safely today, using currently available technology. If this were not required, businesses would be allowed to do anything, premised on the hope that some day they could control the wastes they are creating today.

CDPHE does not believe that, for this situation, it is wise to require monitored retrievable storage. The wastes at Cotter's Cañon City mill will be permanently disposed of under the existing license, in a disposal cell designed to last at least 1000 years. If it is advisable at some time in the future, the cell could always be opened and the material recycled, treated, or subjected to whatever technology necessitated the re-opening of the cell. In the meantime, Cotter's waste management procedures rely on the best available current technology to ensure protection of human health and the environment.

Comment No. 29

One commenter questioned whether doctors in the area had been trained to recognize and treat radiation-related illnesses.

Response to Comment No. 29

Within the context of past radioactive contamination exposure caused by Cotter's Cañon City mill, the primary radiation-related illness that could be caused by this exposure is cancer. Medical professionals in Cañon City, as well as medical professionals in other Colorado cities, are trained to recognize and treat cancer.

Nevertheless, in response to public concerns, EPA will contact the appropriate local health agencies, obtain a list of medical professionals in the area, and send out letters that provide pertinent information regarding the Superfund site.

Comment No. 30

One commenter questioned how the community would be informed in case of a release or emergency at Cotter's Cañon City mill.

Response to Comment No. 30

Under the Radioactive Materials License, Cotter is required to prepare a written plan that establishes a warning system for the mill facility. This plan includes protocols for reporting accidents and emergency response capability. The plan also contains requirements for immediately reporting any discovery of an emergency, or imminent threat of an emergency, to CDPHE. In emergency situations, Cotter or CDPHE would notify the community, in cooperation with local emergency response officials and broadcast channels.

Comment No. 31

What is the life expectancy of the tailings pond (disposal cell) liner?

Response to Comment No. 31

Synthetic liners are generally expected to last a minimum of 20 years. The containment system beneath the main impoundment at Cotter's Cañon City mill consists of 18 inches of a compacted bentonite clay sub-liner and a synthetic, or hypalon, liner that is covered by an additional 12 inches of compacted bentonite clay. It is expected that this triple liner system will hold contaminants inside the impoundment for the long term.

Cotter's Cañon City mill utilized unlined tailings ponds between 1958 and 1983, when a new multi-layered clay-and-hypalon-lined main impoundment was constructed and put into service. Although Cotter began using the main impoundment in 1979, it took until 1983 to excavate and transfer all of the old tailings pond materials to the new main impoundment.

The main impoundment looks like two "ponds," or disposal cells, because water is placed over the tailings material in order to minimize dust problems. The main impoundment is composed of two disposal cells called the primary and secondary impoundments.

The Remedial Action Plan ("RAP") requires that a study be performed annually to evaluate the integrity of the liner system. Evaluations of the liner system's integrity were first performed in 1995. A report dated August 15, 1995 and entitled *Using Piper/Stiff Diagrams to Characterize Ground Water in Area of New Impoundments,* concluded that there was no evidence of liner leakage at that time. A second report, dated August 22, 1995, and entitled *Seepage Detection, Verification and Response Plan for the New Impoundment*, established a monitoring system and evaluation method using magnesium as a key indicator to evaluate the potential for liner leakage. The monitoring system and evaluation method described in this report are used each year by Cotter to evaluate the liner system's integrity. Results of the evaluations are published annually by Cotter. The 2000 Annual Report presents data that indicate that there has been no liner leakage during the year 2000. If leakage is discovered through the monitoring program, Cotter is required to remedy the situation under the Radioactive Materials License.

At the end of the operating life of Cotter's Cañon City mill facility, the primary and secondary impoundments will be de-watered, the tailings materials will be contoured into a mound shape, and both impoundments will be capped with fill dirt. The purpose of entombment is to isolate the tailings material from rain, snow, and from ground water.

Comment No. 32

Have there been high dust readings that the public was not informed about?

Response to Comment No. 32

No. However, because of the size of Cotter's Cañon City mill operations, it is impossible to completely eliminate all dust emissions from such sources as unpaved service roads. In order to monitor air emissions from the mill, ten air monitoring stations have been installed around the boundary of Cotter's property and in the community of Lincoln Park. Data from these monitoring locations are used by CDPHE to evaluate Cotter's compliance with radioactive dose limits. These limits have been set at levels to be protective of people living near the Cañon City mill facility and include limits for dust emissions. Management of dust emissions, including emissions from the impoundments, is a condition of the license. Results from the emissions/air monitoring program are published in Cotter's annual reports, which are available for review in the Cañon City Public Library. The 2000 Annual Report presents the most recent environmental air sample data for the ten air monitoring locations. The results show that there were no exceedances of dose limits during the year 2000.

Comment No. 33

Were requirements for the PRTW added to the Radioactive Materials License?

Response to Comment No. 33

Yes. Design, construction, operation, and reporting requirements for the PRTW are a part of the Remedial Action Plan, which is Condition 11.2 of the Radioactive Materials License.

Comment No. 34

The State has failed to adequately monitor Cotter's operations before, why should the public trust the State now?

Response to Comment No. 34

CDPHE does not believe that it has ever failed in its responsibilities to regulate the Cañon City mill operations. Ground-water contamination under Lincoln Park is a result of mill tailings stored in leaky, unlined ponds. These ponds began leaking almost immediately after the Cañon City mill began operation in 1958. At that time, the Atomic Energy Commission was the licensing and regulatory authority for the mill.

In 1968, CDPHE was granted authority to regulate the mill and to enforce the license. Through the licensing process, CDPHE required Cotter to construct lined impoundments and to remove the contaminated materials from the unlined impoundments area.

In 1983, CDPHE took legal action against Cotter, under CERCLA, to require additional cleanup. In 1988, CDPHE and Cotter entered into a federal court-ordered agreement whereby Cotter would perform additional cleanup activities in and around the Cañon City mill. Ground-water quality within Lincoln Park has improved as a result of these activities.

CDPHE believes that current license conditions, and Cotter's compliance with those conditions, demonstrates CDPHE's commitment to the protection of human health and the environment.

Comment No. 35

One commenter stated that they had no confidence of receiving prompt help from the government.

Response to Comment No. 35

Under the authorities granted by CERCLA and the requirements contained in the Radioactive Materials License, the state and federal governments are in a position, and have an obligation, to act quickly in response to any potential threat to human health or the environment from Cotter's Cañon City mill. Both EPA and CDPHE are fully committed to fulfilling that obligation.

In addition, EPA maintains an active emergency response program that can be activated immediately if there is an imminent or substantial threat to public health.

Comment No. 36

Is there a financial warranty to clean up the site?

Response to Comment No. 36

Yes. Cotter has set aside money for two surety bonds, one for the RAP ($2,632,000) and one for the Radioactive Materials License ($13,125,000). These bonds are payable to the State of Colorado and are for the express purpose of ensuring that mill closure and reclamation, and completion of the Remedial Action Plan, are adequately funded.